# Determinants of IMF lending: How different is Sub-Saharan Africa? *

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**Abstract**

The initiation of IMF agreements in Sub-Saharan Africa (SSA) follows an inherently different process than in other regions. While economic conditions explain part of the difference in lending decisions, some economic but also political factors have systematically different effects on IMF lending in SSA. Studies that account for selection into IMF programs should take this into account in order to increase the reliability of their findings.

**Keywords:** IMF lending programs, Sub-Saharan Africa, Bayesian logit models, Blinder-Oaxaca decomposition

**JEL-codes:** C59, F33, O19

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# 1 Introduction

The effects of lending programs of the International Monetary Fund (IMF) on economic growth and other variables have been extensively investigated.[1] A major challenge for identifying causal effects of IMF programs is to address selection into such agreements, which is often modeled by binary choice models (e.g. Heckman, 1979; Rosenbaum and Rubin, 1983). These models attribute program participation to various economic and political determinants and their ability to correctly predict the participation of a country in an agreement in a given year is crucial for bias correction.[2]

A big part of IMF lending is concentrated in Sub-Saharan Africa (SSA), where IMF programs are often more frequent than in other regions of the world (Marchesi and Sirtori, 2011). Poor macro-economic conditions in SSA might be a cause; yet, economic variables that are strong predictors of IMF programs in other regions have been found to have only limited power to explain IMF lending in Africa (Stone, 2004). Stone (2004) found evidence that the politics of the IMF might work differently in Africa, where the IMF's major shareholders interfere with the enforcement of loan conditions.

Understanding whether also the initiation of IMF agreements in SSA follows different considerations than in other regions of the world (ROW) can help to improve the prediction of a country's program participation and thus has important implications for the correction of selection bias in applied research.[3] Yet, in what respect IMF lending strategies are different in SSA has not been systematically investigated.

Several factors make SSA subject of potentially different lending decisions: SSA is home to the highest share of least developed and heavily indebted poor countries; countries in SSA have become independent quite recently, which may reinforce preferential treatment by their former colonizers (e.g. Alesina and Dollar, 2000);[4] the largest share of external debt is owed to official creditors, rather than the private sector (e.g. Helleiner, 1992).

In this note we investigate (i) whether potential differences in the engagement of countries in SSA with the IMF are related to differences in their economic and political environments, and (ii) whether some of their characteristics have a different effect on the probability

[1] For recent studies on macroeconomic effects see e.g. Dreher and Walter (2010); Jorra (2012); Bird and Rowlands (2017) and for social and political outcomes Dreher and Gassebner (2012); Clements et al. (2013); Oberdabernig (2013); Casper (2015); Nelson and Wallace (2016); Stubbs et al. (2016).

[2] For papers on the determinants of IMF programs see e.g. Joyce (1992); Sturm et al. (2005); Andersen et al. (2006); Harrigan et al. (2006); Dreher and Vreeland (2009) and Moser and Sturm (2011).

[3] If the initiation of IMF programs is driven by different factors across regions, pooling the regions to estimate the selection model may result in a worse prediction of a country's program participation, and thus weaken the power of models for bias correction.

[4] Western colonizers might cater to their former colonies by exerting influence on IMF lending decisions through their voting shares.

of initiating an IMF agreement as compared to ROW. If we find evidence for a different decision making process in SSA and ROW, this has to be taken into account when modeling the selection of countries into IMF programs.

## 2 Data and methodology

Our baseline analysis uses data provided by Moser and Sturm (2011), who evaluated the robustness of a large number of potential determinants of signing an agreement with the IMF for the period 1990–2009. The dataset covers 14 economic and 14 political variables, $X$, which are used to predict the initiation of a new IMF arrangement, $Y$, in a given year, $P(Y = 1|X)$.

| | ROW sample | | SSA sample | |
|---|---|---|---|---|
| | Mean | Std. dev. | Mean | Std. dev. |
| Signature of agreement | 0.215 | 0.412 | 0.222 | 0.417 |
| International reserves | 3.871 | 2.050 | 2.589 | 1.685 |
| Real GDP growth | 3.699 | 4.325 | 3.536 | 4.517 |
| Log(GDP pc) | 7.400 | 0.810 | 5.736 | 0.871 |
| Investment | 21.053 | 5.683 | 18.129 | 5.526 |
| Debt service | 21.841 | 14.099 | 19.848 | 13.400 |
| External debt (% of GNI) | 59.886 | 40.907 | 107.737 | 48.816 |
| External balance (% of GDP) | -4.328 | 7.949 | -8.351 | 10.032 |
| Economic globalization (KOF index) | 51.590 | 14.002 | 36.854 | 9.864 |
| Terms of trade adjustment | -0.779 | 3.847 | -0.238 | 7.679 |
| Inflation | 13.853 | 17.416 | 11.024 | 12.825 |
| Government budget deficit | 15.401 | 11.014 | 7.453 | 4.605 |
| Fixed exchange rate | 0.162 | 0.369 | 0.444 | 0.498 |
| Currency crisis | 0.081 | 0.273 | 0.101 | 0.302 |
| Financial openness | 0.104 | 1.408 | -0.634 | 1.005 |
| Share of past 5 years with IMF | 0.242 | 0.206 | 0.290 | 0.180 |
| Lagged executive elections | 0.147 | 0.355 | 0.169 | 0.376 |
| Lagged legislative elections | 0.254 | 0.436 | 0.212 | 0.410 |
| Lead executive elections | 0.145 | 0.352 | 0.185 | 0.389 |
| Lead legislative elections | 0.247 | 0.432 | 0.212 | 0.410 |
| Political instability | 0.458 | 1.853 | -0.413 | 0.461 |
| Social unrest | 0.429 | 1.680 | -0.199 | 0.841 |
| Political rights and civil liberties | 3.350 | 1.312 | 4.349 | 1.176 |
| Political globalization (KOF index) | 69.193 | 15.531 | 59.469 | 14.935 |
| Quality of government | 0.494 | 0.149 | 0.428 | 0.106 |
| UN Security Council membership | 0.098 | 0.298 | 0.048 | 0.214 |
| Share in world GDP | 0.311 | 0.495 | 0.017 | 0.010 |
| Trade with US | 0.106 | 0.112 | 0.042 | 0.077 |
| Vote in line with the US in UNGA | 0.310 | 0.118 | 0.269 | 0.083 |
| Observations | 469 | | 189 | |

**Table 1:** Descriptive statistics

The economic determinants include international reserves, real GDP growth, GDP per capita, investment, debt service, external debt, external balance of goods and services, economic globalization, terms of trade adjustment, inflation, government budget deficit, dummies for fixed exchange rate and currency crisis, and a measure for financial openness. The political determinants include the moving average of an IMF program dummy for the past 5 years, dummies for lagged and lead executive and legislative elections, political instability, social unrest, a political rights and civil liberties index, political globalization, quality of government, a dummy for UN Security Council membership, the country's share in world GDP, trade with the US, and an indicator for voting in line with the US in the UN General Assembly.[5] In addition to these variables, we include year dummies in $X$ in order to account for common time effects. Table 1 reports descriptive statistics for the variables that form part of our analysis, for ROW and SSA.

We estimate Bayesian logit models (equation 1) to explain the initiation of IMF agreements for SSA and for ROW separately, including the full set of covariates and time effects.

$$P(Y = 1|X) = \Lambda(X'\beta) \tag{1}$$

$\beta$ is the parameter vector and $\Lambda$ is the logistic distribution function. Bayesian estimation methods apply Bayes' rule to derive information about the parameters $\beta$ from the data $y$.

$$\underbrace{p(\beta|y)}_{\text{posterior}} \propto \underbrace{p(y|\beta)}_{\text{likelihood}} \underbrace{p(\beta)}_{\text{prior}} \tag{2}$$

The posterior density is proportional to the likelihood function times the prior density. We use a prior with 0 mean and precision 0.0001 (see also Polson and Scott, 2011; Polson et al., 2013). The posterior mean for variable $k$ is given by

$$E(\beta_k|y) = \frac{1}{S}\sum_{s=1}^{S}\beta_k^s, \tag{3}$$

[5] We had to exclude a measure of short-term debt because of its limited coverage. As this variable turned out to be significant in only 0.2% of all estimated models by Moser and Sturm (2011), this is likely to be of minor importance. Furthermore, we updated the data on the quality of government from the ICRG because the dataset provided by Moser and Sturm contained only missing values for this variable. We kept only observations for which data on all variables is available, what resulted in an unbalanced panel that covers the period 1990–2004. Information on the country-year coverage of the final sample is provided in Table A.1 in Appendix A. For a more detailed description of the variables see Moser and Sturm (2011).

where $S$ is the number of draws from the posterior. Numerical p-values are derived as

$$p_k = \frac{1}{S}\sum_{s=1}^{S} I\left(\frac{\beta_k^s}{E(\beta_k|y)} > 0\right), \tag{4}$$

where $I$ is the indicator function.[6] We combine three Markov Chains of $S = 100,000$ iterations each, and check their convergence using Gelman and Rubin's (1992) convergence diagnostic.

Bayesian estimation techniques are particularly suited for dealing with small samples since inference does not rely on a large number of observations but on the number of samples, $S$, taken from the posterior. The Bayesian framework, furthermore, allows to use information on parameter estimates from our baseline analysis as prior information in additional robustness checks that rely on smaller sample sizes. We will return to this in section 4.

The results of the Bayesian logit regressions feed into a Blinder-Oaxaca decomposition (Blinder 1973; Oaxaca 1973; Yun 2004; Fairlie 2005) that splits the difference in the probability of entering an IMF agreement between the regions into a part that results from differences in economic or political environments (difference in characteristics) and a part that stems from differences in the influence of those characteristics on the probability of receiving an IMF loan (difference in parameters):[7]

$$\begin{aligned} &P(Y^{ssa}=1|X^{ssa}) - P(Y^{row}=1|X^{row}) = \\ &= \underbrace{\left[\overline{\Lambda(X^{ssa}\beta^{row})} - \overline{\Lambda(X^{row}\beta^{row})}\right]}_{\text{difference in characteristics, } \Delta_k^X} + \underbrace{\left[\overline{\Lambda(X^{ssa}\beta^{ssa})} - \overline{\Lambda(X^{ssa}\beta^{row})}\right]}_{\text{difference in parameters, } \Delta_k^b} \end{aligned} \tag{5}$$

The contribution of an individual covariate $k$ to $\Delta_k^X$ and $\Delta_k^b$ is derived as in Kaiser (2015):

$$\begin{aligned} \Delta_k^X &= \frac{1}{N^{row}N^{ssa}}\sum_{i}^{N^{row}}\sum_{j}^{N^{ssa}}\left[\Lambda(X_j^{ssa}\beta^{row}) - \Lambda(X_i^{row}\beta^{row})\right]\frac{(X_{jk}^{ssa} - X_{ik}^{row})\beta_k^{row}}{(X_j^{ssa} - X_i^{row})\beta^{row}} \\ \Delta_k^b &= \frac{1}{N^{row}N^{ssa}}\sum_{i}^{N^{row}}\sum_{j}^{N^{ssa}}\left[\Lambda(X_j^{ssa}\beta^{ssa}) - \Lambda(X_i^{ssa}\beta^{row})\right]\frac{X_{jk}^{ssa}(\beta_k^{ssa} - \beta_k^{row})}{X_j^{ssa}(\beta^{ssa} - \beta^{row})} \end{aligned} \tag{6}$$

If the signature of IMF agreements follows the same process in SSA and ROW we will observe statistically significant effects for differences in characteristics only, but not for differences in parameters. On the other hand, if the determinants of signing an agreement differ across the regions the difference in parameters will be statistically significant

[6] The calculation of the p-values corresponds to counting the proportion of draws for which $\beta_k^s$ is equally signed as its posterior mean $E(\beta_k|y)$.

[7] ROW serves as the base group. $\overline{\Lambda(X\beta)} = 1/N\sum_i^N \Lambda(X_i\widehat{\beta})$ and $i$ is an observation.

and better prediction of program participation can be obtained by accounting for this heterogeneity.

# 3 Results

Table 2 reports the results of the decomposition analysis. 22.2% of the observations in SSA have signed an agreement with the IMF; in ROW this number amounts to 21.5%.[8]

The column labeled difference in characteristics summarizes the impact of observable conditions that are systematically different in SSA as compared to ROW. The logit estimates (in Table B.1 in Appendix B) suggest that higher external debt increases the probability of entering an IMF agreement (in the base group for the decomposition, ROW), which makes countries in SSA 4.5 percentage points more likely to enter on account of their higher debt levels. By contrast, a higher external balance contributes to a lower prospect of initiating an agreement, making countries in SSA 2.7 percentage points more likely to sign. Finally, in our sample countries in ROW are more likely to engage with the IMF if they have been part of an agreement in the previous five years; the larger share of past program years in SSA leads to a 0.4 percentage point higher likelihood of signing a new agreement. While other factors such as differences in GDP per capita or economic globalization have a quantitatively important contribution to the difference in characteristics part, their effect is estimated rather imprecisely, resulting in numerical p-values (slightly) above 0.1.

Turning to the more important question of whether a country's characteristics have different impacts on the conclusion of new lending agreements in SSA, the column labeled difference in parameters in Table 2 indicates that the effects of some economic but also certain political variables are substantially different in SSA as compared to ROW. The logit results in Table B.1 show that in SSA higher debt levels decrease the likelihood of signing a new agreement, while in ROW the opposite applies; this contributes to a 24.3 percentage points lower probability of concluding a new program in SSA. Furthermore, while a higher share of years under an IMF agreement in the past raises the probability of signing a new agreement in ROW, the effect in SSA is the opposite, contributing to a 19.1 percentage points lower likelihood of entering an agreement in SSA. Also voting patterns in the UN General Assembly have a different influence on the initiation of agreements in ROW and SSA. In SSA, voting proximity with the US increases the likelihood of signing an agreement substantially, while the positive effect is much lower in ROW; as a result

[8] Although this gap is not statistically significant, this does not preclude different decision making processes to be in force across the regions. For selection bias correction to be effective, individual countries' program participation has to be correctly predicted, rather than aggregate shares.

voting patterns contribute to a 25 percentage points higher probability of concluding an IMF agreement in SSA. The effects of all other variables have a numerical p-value larger than 0.1 in the decomposition analysis, although their quantitative effect is sometimes rather important.[9]

| | SSA | | ROW | |
|---|---|---|---|---|
| Probability of signing agreement | 22.222 *** | (0.000) | 21.535 *** | (0.000) |
| | difference in characteristics | | difference in parameters | |
| International reserves | 0.941 | (0.395) | 1.073 | (0.861) |
| Real GDP growth | 0.076 | (0.376) | 1.509 | (0.571) |
| Log(GDP pc) | -7.797 | (0.123) | 4.748 | (0.921) |
| Investment | 0.498 | (0.616) | 5.772 | (0.723) |
| Debt service | -0.382 | (0.105) | -3.394 | (0.601) |
| External debt (% of GNI) | 4.475 ** | (0.037) | -24.255 ** | (0.015) |
| External balance (% of GDP) | 2.678 *** | (0.003) | 3.102 | (0.597) |
| Economic globalization (KOF index) | 4.633 | (0.133) | 28.740 | (0.113) |
| Terms of trade adjustment | 0.082 | (0.965) | -0.361 | (0.585) |
| Inflation | -0.333 | (0.268) | 2.122 | (0.661) |
| Government budget deficit | -0.215 | (0.895) | 2.259 | (0.736) |
| Fixed exchange rate | 0.652 | (0.647) | 3.865 | (0.383) |
| Currency crisis | -0.026 | (0.637) | -1.188 | (0.152) |
| Financial openness | -1.341 | (0.249) | 1.168 | (0.549) |
| Share of past 5 years with IMF | 0.438 ** | (0.040) | -19.09 *** | (0.009) |
| Lagged executive elections | 0.188 | (0.220) | 0.835 | (0.669) |
| Lagged legislative elections | -0.246 | (0.199) | 1.653 | (0.439) |
| Lead executive elections | -0.022 | (0.792) | -0.955 | (0.524) |
| Lead legislative elections | -0.141 | (0.379) | 0.815 | (0.667) |
| Political instability | -0.084 | (0.913) | -1.665 | (0.576) |
| Social unrest | -0.651 | (0.293) | 0.328 | (0.847) |
| Political rights and civil liberties | -1.556 | (0.289) | -11.441 | (0.308) |
| Political globalization (KOF index) | -1.09 | (0.393) | -9.808 | (0.505) |
| Quality of government | 1.257 | (0.129) | 8.483 | (0.617) |
| UN Security Council membership | 0.204 | (0.312) | -0.302 | (0.489) |
| Share in world GDP | -0.227 | (0.888) | 10.563 | (0.108) |
| Trade with US | 1.195 | (0.287) | 3.667 | (0.196) |
| Vote in line with the US in UNGA | -1.444 | (0.136) | 24.964 * | (0.076) |
| Time dummies (joint effect) | 0.067 | (0.823) | -34.349 | (0.475) |
| Contribution to total difference | 1.828 | (0.724) | -1.141 | (0.845) |

Note: Numerical p-values, based on the sign of the parameter estimates of the Markov chains, in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

**Table 2:** Decomposition results

Our findings are in line with the arguments in the introduction. The lower probability of countries in SSA to conclude a new lending program if they had an active agreement with the IMF in the past five years could stem from the on average longer program duration in

[9] Especially economic globalization, share in world GDP, and time effects have a quantitatively important contribution to the difference in parameters part. Yet, their numerical p-values are (slightly) above 0.1.

this region, where concessional lending is more likely than in ROW. Additionally, the debt structure in SSA may impact on the willingness of the IMF to support countries with a lending agreement, resulting in a negative effect of higher levels of debt on IMF program initiation (see also Helleiner, 1992). Moreover, similar arguments to those of Stone (2004), that IMF lending is highly politicized in SSA, might account for the particularly strong influence of UN voting patterns on program initiation in SSA.

# 4 Robustness

To test the robustness of our results we add five additional variables to the set of baseline regressors: government expenditure as a share of GDP, a country's share of IMF quotas, ethnic fractionalization, the share of seats of parties representing special interests (religious, nationalistic, regional, and rural) in parliament, and a political cohesion index (see Sturm et al., 2005, for details).[10] Because the inclusion of these variables results in smaller sample sizes, we make use of information derived from the baseline analysis. More specifically, we use the parameter estimates from the analysis above as prior means for the baseline controls and the inverse of ten times their squared standard errors as prior precision, and specify the priors for the five new variables like in section 2.

As shown in Table 3, slightly more observations have signed an agreement with the IMF in the restricted sample: 24.3% in SSA and 22.8% in ROW. Like before, differences in the external balance and in previous engagement with the IMF remain important contributors to the difference in characteristics part, accounting, respectively, for a 4.2 and 0.3 percentage points higher probability of concluding a new agreement in SSA. Additionally, differences in some variables that had a numerical p-value of slightly above 0.1 before, now gain qualitative importance: The lower GDP per capita in SSA contributes to a 14.4 percentage points lower probability of concluding an agreement in this region, since higher income levels are positively related to program participation (see also Moser and Sturm, 2011).[11] Economic globalization and a better quality of government, by contrast, are connected to a lower likelihood of initiating a new agreement in the base group; thus, the lower values for these indicators in SSA contribute to a 10.9 and 2.8 percentage point higher probability of signing an agreement in this region. Since ethnic fractionalization is connected to a higher probability of program participation, countries in SSA are 10.5 percentage points more likely to enter an agreement, all else equal. Differences in external debt between SSA and ROW are less important than before.

[10] Descriptive statistics for the data used in the robustness analysis are available in Table A.2 in Appendix A. Variables used by Sturm et al. (2005) that are highly correlated or accounted for by other covariates in $X$, or that are captured by the time-dummies, are excluded from the robustness check.

[11] The results of the logit models are available in Table B.2 in Appendix B.

| | SSA | | ROW | |
|---|---|---|---|---|
| Probability of signing agreement | 24.342 *** | (0.000) | 22.811 *** | (0.000) |
| | difference in characteristics | | difference in parameters | |
| International reserves | 2.386 | (0.200) | 7.963 | (0.332) |
| Real GDP growth | 0.105 | (0.519) | 1.322 | (0.765) |
| Log(GDP pc) | -14.360 ** | (0.041) | 48.813 | (0.587) |
| Investment | -0.303 | (0.767) | -0.921 | (0.957) |
| Debt service | -0.591 | (0.245) | -7.712 | (0.473) |
| External debt (% of GNI) | 2.252 | (0.487) | -38.195 ** | (0.013) |
| External balance (% of GDP) | 4.201 *** | (0.003) | 8.336 | (0.273) |
| Economic globalization (KOF index) | 10.883 ** | (0.032) | 19.878 | (0.515) |
| Terms of trade adjustment | 0.230 | (0.715) | 0.116 | (0.872) |
| Inflation | -0.880 | (0.104) | 5.301 | (0.481) |
| Government budget deficit | 0.183 | (0.912) | 0.124 | (0.989) |
| Fixed exchange rate | 0.616 | (0.791) | 9.931 | (0.288) |
| Currency crisis | 0.002 | (0.997) | -1.973 * | (0.087) |
| Financial openness | -2.388 | (0.200) | 4.081 | (0.284) |
| Share of past 5 years with IMF | 0.323 ** | (0.041) | -33.189 *** | (0.005) |
| Lagged executive elections | 0.220 | (0.232) | 2.019 | (0.413) |
| Lagged legislative elections | -0.440 | (0.211) | 1.651 | (0.568) |
| Lead executive elections | 0.085 | (0.884) | -2.597 | (0.336) |
| Lead legislative elections | -0.100 | (0.689) | 3.166 | (0.303) |
| Political instability | 0.128 | (0.903) | 7.350 | (0.267) |
| Social unrest | -0.917 | (0.291) | 2.921 | (0.171) |
| Political rights and civil liberties | -3.150 | (0.141) | -48.074 ** | (0.023) |
| Political globalization (KOF index) | -1.478 | (0.500) | -40.360 | (0.176) |
| Quality of government | 2.822 ** | (0.041) | -6.703 | (0.821) |
| UN Security Council membership | 0.251 | (0.293) | -0.494 | (0.541) |
| Share in world GDP | -0.945 | (0.739) | 22.544 | (0.183) |
| Trade with US | 1.918 | (0.239) | 5.519 | (0.381) |
| Vote in line with the US in UNGA | -2.143 | (0.131) | 51.859 ** | (0.032) |
| Ethnic fractionalization | 10.498 ** | (0.025) | 20.783 | (0.735) |
| Share of IMF quota | 1.529 | (0.723) | 5.629 | (0.749) |
| Special interest in parliament | -0.094 | (0.559) | 5.355 | (0.204) |
| Political cohesion | 1.562 | (0.388) | 1.154 | (0.424) |
| Government expenditure (% of GDP) | 0.098 | (0.527) | 6.978 | (0.783) |
| Time dummies (joint effect) | 0.059 | (0.853) | -73.603 | (0.156) |
| Contribution to total difference | 12.558 | (0.157) | -11.027 | (0.228) |

Note: Numerical p-values, based on the sign of the parameter estimates of the Markov chains, in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

**Table 3:** Decomposition results (robustness analaysis)

The robustness check reinforces the finding that economic and political factors have substantially different effects on the likelihood of concluding an IMF agreement in SSA. The difference in parameters parts confirm the differential impact of external debt, past involvement with the IMF, and voting patterns in the UN General Assembly, with larger effects as compared to the baseline analysis. Additionally, we find that the occurrence of currency crises and higher values of political rights and civil liberties impact negatively

on the signature of IMF agreements in SSA, while their effect is much less important in ROW; this contributes, respectively, to a 1.9 and 48.1 percentage points lower probability of signing an agreement in SSA.[12]

# 5 Discussion

Our analysis indicates that the selection of countries into IMF programs follows different considerations in SSA as compared to other world regions. The impact of the different data generating process underlying IMF lending in SSA is quantitatively more important than the difference in economic and political environments that countries in SSA face. This has important implications for empirical studies that use Heckman selection models or propensity score matching to correct potential selection bias when evaluating the effects of IMF programs; allowing for interactions of regional dummies with economic and political variables can substantially improve the prediction of countries' program participation, which is crucial for obtaining reliable results of the impact of IMF programs on the variables of interest.

Our research also opens the door for more detailed analyses of the reasons for the differences found. Furthermore, while most empirical studies do not explicitly distinguish between the determinants of concessional and non-concessional lending programs when modeling selection, this would be important for future research; it could well be that the results for SSA are influenced by the concessional character of most of their agreements.

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[12] Since many types of IMF programs (especially concessional lending programs to low-income countries) last for more than one year and the currency crisis dummy enters the analysis one year lagged, the negative effect might reflect that an agreement has been signed in the same year in which the crisis occurred. The negative impact of political rights and civil liberties, as a proxy for democracy, might reflect the lower perception of political costs for turning to the IMF in autocratic regimes (see Moser and Sturm, 2011).

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# A Data appendix

| | |
|---|---|
| **SSA sample** | |
| Cameroon | 2003, 2004 |
| Ethiopia | 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Gabon | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Ghana | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Kenya | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Madagascar | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Malawi | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, |
| Mali | 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Mozambique | 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Niger | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, |
| Senegal | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Tanzania | 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Togo | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Uganda | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Zambia | 1990, 1991, 1992, 1993, 1999, 2000, 2001, 2002, 2003, 2004 |
| **ROW sample** | |
| Albania | 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Algeria | 1990, 1991, 1992, 1993, |
| Argentina | 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Armenia | 2000, 2001, 2002, 2003, 2004 |
| Azerbaijan | 2001, 2002, 2003, 2004 |
| Bangladesh | 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Belarus | 1999, 2000, 2001, 2002, 2003, 2004 |
| Bolivia | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Brazil | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Bulgaria | 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Chile | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Colombia | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, |
| Costa Rica | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Croatia | 2000, 2001, 2002, 2003, 2004 |
| Ecuador | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, |
| El Salvador | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Guatemala | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Guyana | 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Haiti | 1990, 1991, 1992, 1993, 1994, 1995, |
| Honduras | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| India | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Indonesia | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Jordan | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1999, 2000, 2001, 2002, 2003, 2004 |
| Kazakhstan | 2002, 2003, 2004 |
| Latvia | 2000, 2001, 2002, 2003, 2004 |
| Malaysia | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Mexico | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Moldova | 2000, 2001, 2002, 2003, 2004 |
| Morocco | 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Nicaragua | 2002, 2003, 2004 |
| Pakistan | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Panama | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Paraguay | 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Peru | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Philippines | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Poland | 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Romania | 1999, 2000, 2001, 2002, 2003, 2004 |
| Thailand | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Tunisia | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Turkey | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Ukraine | 1999, 2000, 2001, 2002, 2003, 2004 |
| Uruguay | 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 |
| Vietnam | 2003, 2004 |

**Table A.1:** Country-year coverage (baseline estimation)

| | ROW sample | | SSA sample | |
|---|---|---|---|---|
| | Mean | Std. dev. | Mean | Std. dev. |
| IMF program | 0.228 | 0.420 | 0.243 | 0.431 |
| International reserves | 3.993 | 2.035 | 2.493 | 1.641 |
| Real GDP growth | 3.698 | 4.253 | 3.644 | 4.261 |
| Log(GDP pc) | 7.420 | 0.819 | 5.806 | 0.899 |
| Investment | 21.070 | 5.615 | 18.508 | 5.483 |
| Debt service | 21.677 | 13.864 | 18.804 | 12.477 |
| External debt (% of GNI) | 60.207 | 41.239 | 104.688 | 46.419 |
| External balance (% of GDP) | -4.513 | 8.037 | -8.426 | 10.984 |
| Economic globalization (KOF index) | 52.483 | 13.812 | 36.416 | 8.867 |
| Terms of trade adjustment | -0.764 | 3.687 | -1.348 | 6.181 |
| Inflation | 13.109 | 16.540 | 10.182 | 11.064 |
| Government budget deficit | 15.039 | 10.183 | 7.611 | 4.224 |
| Fixed exchange rate | 0.168 | 0.374 | 0.500 | 0.502 |
| Currency crisis | 0.078 | 0.269 | 0.086 | 0.281 |
| Financial openness | 0.173 | 1.399 | -0.644 | 0.897 |
| Share of past 5 years with IMF | 0.247 | 0.207 | 0.278 | 0.163 |
| Lagged executive elections | 0.138 | 0.346 | 0.164 | 0.372 |
| Lagged legislative elections | 0.251 | 0.434 | 0.204 | 0.404 |
| Lead executive elections | 0.154 | 0.362 | 0.211 | 0.409 |
| Lead legislative elections | 0.253 | 0.435 | 0.217 | 0.414 |
| Political instability | 0.456 | 1.869 | -0.427 | 0.441 |
| Social unrest | 0.431 | 1.727 | -0.206 | 0.881 |
| Political rights and civil liberties | 3.287 | 1.270 | 4.220 | 1.182 |
| Political globalization (KOF index) | 70.283 | 14.966 | 59.362 | 15.560 |
| Quality of government | 0.501 | 0.143 | 0.427 | 0.101 |
| UN Security Council membership | 0.097 | 0.296 | 0.053 | 0.224 |
| Share in world GDP | 0.316 | 0.502 | 0.017 | 0.010 |
| Trade with US | 0.107 | 0.115 | 0.046 | 0.084 |
| Vote in line with the US in UNGA | 0.321 | 0.116 | 0.277 | 0.082 |
| Ethnic fractionalization | 0.408 | 0.213 | 0.755 | 0.091 |
| Share of IMF quota | 0.431 | 0.480 | 0.080 | 0.042 |
| Special interest in parliament | 0.150 | 0.211 | 0.139 | 0.271 |
| Political cohesion | 0.728 | 0.912 | 0.072 | 0.260 |
| Government expenditure (% of GDP) | 13.006 | 4.505 | 13.409 | 3.412 |
| Observations | 434 | | 152 | |

**Table A.2:** Descriptive statistics (robustness analysis)

# B Supplementary tables

| | ROW sample | | | SSA sample | | |
|---|---|---|---|---|---|---|
| | coef. | p-value | converg. | coef. | p-value | converg. |
| International reserves | -0.867 | (0.395) | 1.00 | -0.196 | (0.889) | 1.00 |
| Real GDP growth | 0.431 | (0.381) | 1.00 | 0.726 | (0.276) | 1.00 |
| Log(GDP pc) | 5.705 | (0.123) | 1.00 | 4.809 | (0.568) | 1.00 |
| Investment | -0.226 | (0.616) | 1.00 | 0.165 | (0.832) | 1.00 |
| Debt service | 0.245 | (0.105) | 1.00 | -0.026 | (0.977) | 1.00 |
| External debt (% of GNI) | 0.110 ** | (0.037) | 1.00 | -0.154 * | (0.063) | 1.00 |
| External balance (% of GDP) | -0.768 *** | (0.003) | 1.00 | -0.882 | (0.135) | 1.00 |
| Economic globalization (KOF index) | -0.374 | (0.133) | 1.00 | 0.547 | (0.217) | 1.00 |
| Terms of trade adjustment | -0.484 | (0.349) | 1.00 | 0.697 | (0.133) | 1.00 |
| Inflation | 0.146 | (0.268) | 1.00 | 0.286 | (0.504) | 1.00 |
| Government budget deficit | 0.028 | (0.895) | 1.00 | 0.340 | (0.721) | 1.00 |
| Fixed exchange rate | 2.790 | (0.647) | 1.00 | 10.659 | (0.263) | 1.00 |
| Currency crisis | -3.868 | (0.509) | 1.00 | -14.776 * | (0.071) | 1.00 |
| Financial openness | 2.005 | (0.249) | 1.00 | -0.640 | (0.845) | 1.00 |
| Share of past 5 years with IMF | 20.238 ** | (0.040) | 1.00 | -66.826 ** | (0.031) | 1.00 |
| Lagged executive elections | 8.091 | (0.220) | 1.00 | 9.914 | (0.271) | 1.00 |
| Lagged legislative elections | 6.694 | (0.199) | 1.00 | 11.684 | (0.136) | 1.00 |
| Lead executive elections | -1.134 | (0.792) | 1.00 | -6.066 | (0.371) | 1.00 |
| Lead legislative elections | 4.544 | (0.379) | 1.00 | 6.968 | (0.399) | 1.00 |
| Political instability | 0.072 | (0.913) | 1.00 | 4.418 | (0.556) | 1.00 |
| Social unrest | 1.128 | (0.293) | 1.00 | -0.193 | (0.992) | 1.00 |
| Political rights and civil liberties | -1.913 | (0.289) | 1.00 | -4.317 * | (0.099) | 1.00 |
| Political globalization (KOF index) | 0.145 | (0.393) | 1.00 | -0.071 | (0.777) | 1.00 |
| Quality of government | -25.06 | (0.129) | 1.00 | 3.855 | (0.900) | 1.00 |
| UN Security Council membership | -6.017 | (0.312) | 1.00 | -11.008 | (0.305) | 1.00 |
| Share in world GDP | 0.777 | (0.888) | 1.00 | 658.185 | (0.109) | 1.00 |
| Trade with US | -23.233 | (0.287) | 1.00 | 80.482 | (0.279) | 1.00 |
| Vote in line with the US in UNGA | 33.665 | (0.136) | 1.00 | 119.376 ** | (0.021) | 1.00 |
| Time dummies | | yes | | | yes | |
| Observations | | 469 | | | 189 | |

Note: The table reports average marginal effects, multiplied by 100 (coef.). Numerical p-values, based on the sign of the parameter estimates of the Markov chains, in parentheses. * p<0.10, ** p<0.05, *** p<0.01. converg. refers to Gelman and Rubin's (1992) convergence diagnostic. SSA refers to Sub-Saharan Africa and ROW stands for the rest of the world.

**Table B.1:** Bayesian logit results: average marginal effects (baseline)

| | ROW sample | | | SSA sample | | |
|---|---|---|---|---|---|---|
| | coef. | p-value | converg. | coef. | p-value | converg. |
| International reserves | -1.345 | (0.200) | 1.00 | 1.394 | (0.537) | 1.00 |
| Real GDP growth | 0.325 | (0.524) | 1.00 | 0.441 | (0.537) | 1.00 |
| Log(GDP pc) | 7.493 ** | (0.041) | 1.00 | 10.827 | (0.343) | 1.00 |
| Investment | 0.142 | (0.767) | 1.00 | 0.056 | (0.965) | 1.00 |
| Debt service | 0.180 | (0.245) | 1.00 | -0.178 | (0.645) | 1.00 |
| External debt (% of GNI) | 0.043 | (0.487) | 1.00 | -0.227 ** | (0.023) | 1.00 |
| External balance (% of GDP) | -0.870 *** | (0.003) | 1.00 | -1.199 ** | (0.029) | 1.00 |
| Economic globalization (KOF index) | -0.575 ** | (0.032) | 1.00 | 0.005 | (0.980) | 1.00 |
| Terms of trade adjustment | -0.166 | (0.751) | 1.00 | -0.206 | (0.707) | 1.00 |
| Inflation | 0.226 | (0.104) | 1.00 | 0.479 | (0.313) | 1.00 |
| Government budget deficit | -0.023 | (0.912) | 1.00 | -0.019 | (1.000) | 1.00 |
| Fixed exchange rate | 1.622 | (0.791) | 1.00 | 14.287 | (0.260) | 1.00 |
| Currency crisis | -5.476 | (0.336) | 1.00 | -19.150 ** | (0.029) | 1.00 |
| Financial openness | 2.353 | (0.200) | 1.00 | -2.962 | (0.463) | 1.00 |
| Share of past 5 years with IMF | 21.720 ** | (0.025) | 1.00 | -76.467 ** | (0.015) | 1.00 |
| Lagged executive elections | 7.925 | (0.232) | 1.00 | 12.936 | (0.153) | 1.00 |
| Lagged legislative elections | 6.669 | (0.211) | 1.00 | 9.447 | (0.272) | 1.00 |
| Lead executive elections | 1.405 | (0.884) | 1.00 | -7.435 | (0.311) | 1.00 |
| Lead legislative elections | 2.331 | (0.689) | 1.00 | 11.387 | (0.201) | 1.00 |
| Political instability | -0.166 | (0.903) | 1.00 | -11.075 | (0.259) | 1.00 |
| Social unrest | 1.138 | (0.291) | 1.00 | -6.704 | (0.236) | 1.00 |
| Political rights and civil liberties | -2.788 | (0.141) | 1.00 | -10.037 *** | (0.003) | 1.00 |
| Political globalization (KOF index) | 0.125 | (0.500) | 1.00 | -0.395 | (0.229) | 1.00 |
| Quality of government | -35.972 ** | (0.041) | 1.00 | -34.230 | (0.475) | 1.00 |
| UN Security Council membership | -6.115 | (0.293) | 1.00 | -10.066 | (0.383) | 1.00 |
| Share in world GDP | 2.603 | (0.739) | 1.00 | 923.174 | (0.181) | 1.00 |
| Trade with US | -27.390 | (0.239) | 1.00 | 66.668 | (0.497) | 1.00 |
| Vote in line with the US in UNGA | 35.707 | (0.131) | 1.00 | 154.966 ** | (0.017) | 1.00 |
| Ethnic fractionalization | 26.124 ** | (0.025) | 1.00 | 36.475 | (0.511) | 1.00 |
| Share of IMF quota | -4.012 | (0.723) | 1.00 | 44.417 | (0.760) | 1.00 |
| Special interest in parliament | 17.463 * | (0.100) | 1.00 | 35.062 ** | (0.041) | 1.00 |
| Political cohesion | -2.101 | (0.388) | 1.00 | 9.107 | (0.484) | 1.00 |
| Government expenditure (% of GDP) | 0.361 | (0.521) | 1.00 | 0.593 | (0.640) | 1.00 |
| Time dummies | | yes | | | yes | |
| Observations | | 434 | | | 152 | |

Note: The table reports average marginal effects, multiplied by 100 (coef.). Numerical p-values, based on the sign of the parameter estimates of the Markov chains, in parentheses. * p<0.10, ** p<0.05, *** p<0.01. converg. refers to Gelman and Rubin's (1992) convergence diagnostic. SSA refers to Sub-Saharan Africa and ROW stands for the rest of the world.

**Table B.2:** Bayesian logit results: average marginal effects (robustness)